

Development of Cost Analysis Model using Hospital Database in Korea

Woo Jung-Sik¹, Kim Han-Sung²

¹ Dept of Health Administration, Cheju Halla University, Republic of Korea

² Dept of Healthcare Informatics, Korea Polytechnics, Republic of Korea

{ ¹jswoo@chu.ac.kr, ²khs0113@kopo.ac.kr }

Abstract. Korea's national health insurance fee is taking Fee for Services based on Resource Based Relative Value Scale (RBRVS), however, medical service suppliers are raising a question of national health insurance fee's low cost recovery rate. In this regard, our study reviewed hospital cost analysis methods in Europe, and drew a conclusion of cost analysis model which can be adaptable to hospitals in our country, especially through the study of Germany's cost analysis method. So we expect that, by complementing this cost analysis model, the empirical study using hospital's financial database is made, and then more reasonable standards will be suggested to be able to make a decision of suitable medical fee.

Keywords: Hospital Cost, Cost Accounting System, Primary Cost Center, Allocation Cost

1 Introduction

Korea's National Health Insurance fee is taking Fee for services based on Resource based Relative Value Scale (RBRVS). Relative Value Scale is based on resource costs, input by service, and it is also the way which can seek not only the differentiation of resource's relative value but also the suitability of insurance fee. In addition to that, Relative Value Scale has a strong point of that it is able to guarantee more objective basis than the existing ways such as the Amount System, when measuring the value of service[1].

However it is under the circumstance that it is very rare to research cost analysis by patient, targeting medical institutions, which can be the standard to measure the reasonable National Health Insurance Fee, even though medical service suppliers bring up the problems of National Health Insurance Fee's low compensation level and speak out of their economic difficulties, caused by above problems. That's why this study is to look into Europe's cost analysis, to refer German cost analysis, and finally to effectively develop the cost analysis model for hospitals, which can be applied in our country.

2 Related Researches

Many European countries use cost data, for developing DRG system. Among those countries, all hospitals of England, Portugal and Netherlands are taking the system of building up and annually reporting about Mandatory cost-accounting system. And some countries like Germany and France which don't take the system are carrying systematic cost-accounting, in accordance with National costing guidelines. For example, France recommends the use of analytical accounting which is Hospital's cost accounting model. Ireland has its own National costing manual related to the collection of cost-accounting data, and also conducts an audit for it. In cas of Sweden, it developed its National guideline for cost accounting per case. Besides that, many European countries are using the cost-accounting data for selected hospitals, to apply to DRG cost-accounting [2].

When cost accounting, many countries in Europe are taking direct method (England, Estonia, Finland, Netherlands and Sweden) to allocate Overhead cost to medical departments. The countries such as France and Germany, take the step-down method [3]. In case of Germany, it is taking the step-down method, for the hospitals which collect cost-accounting data. But now hospitals are taking direct method, in general, as the fact that the way of allocation affects little to each patient's cost was known Table 1.

Table 1. Different characteristics of the cost-accounting methods in European countries¹

Category	Overhead cost allocation to medical departments	Indirect cost allocation to patients	Direct cost allocation to patients	Data checks (regularity)
Austria	Varying by hospital	Varying hospital by	Gross-costing	Regional authority (irregularly)
England	Direct	Weighting statistics	Top-down micro-costing	National authority (annually)
Estonia	Direct	Mark-up percentage	Top-down micro-costing	National authority (annually)
Finland	Direct	Weighting statistics	Bottom-up micro-costing	No, responsibility of hospitals
France	Step down	Weighting statistics	Top-down micro-costing	Regional authority (annually)
Germany	Step down (preferably)	Weighting statistics	Bottom-up micro-costing	National authority (annually)
Netherlands	Direct	Weighting statistics	Bottom-up micro-costing	National authority (annually)
Sweden	Direct	Weighting statistics	Bottom-up micro-costing	National & regional authorities(annually)

¹ Busse, R., etc Diagnosis-Related Groups in Europe: Moving towards transparency, efficiency and quality in hospitals. (2011)

3 The extract of Hospital Cost Analysis Model

Theoretically, cost has to be allocated to all patients who are homogeneous, medically and in cost-related [4-5]. In case of German where cost accounting system by patient is relatively well built up, all hospitals account cost by cost-center, following Hospital accounting standard. Cost items consist of Labor costs, Material costs and Infrastructure costs, and each cost item has its cost-center group and allocation scheme [6].

In this study, we developed Admission cost analysis model which can be applicable to hospitals in our country, with reference to German's cost analysis method. Cost-center group approximatively consists of Ward, Operating rooms and Anesthesia, and Cost Category consists of Labor costs, Material costs, Drugs costs, Equipment costs and Maintenance costs Table 2.

Table 2. Model of Hospital Inpatient Cost Matrix

Cost Center Group		Labor costs		Material costs		Drugs costs	Equipment costs	Maintenance costs
		Physicians	Medical staff	Separate compensation	Include services			
Ward	Delivery ward	Actual time		Actual usage cost	Actual time	Actual usage cost	Actual time	Actual time
	Intensive care unit	Actual time			Actual time		Actual time	
	General Ward	Care days			Care days		Care days	
	Emergency room	Actual time			Actual time		Actual time	
Operating rooms	Operating rooms	Operation time		Operation time	Operation time	Operation time	Operation time	
	Anesthesia (for operation)	Anesthesia time		Anesthesia time	Anesthesia time	Anesthesia time		
Anesthesia (for treatment)		RBRVS Score		RBRVS Score	RBRVS Score	RBRVS Score		

Among Cost Categories, 'Labor cost' is related to the labor required in the process of medical profit creation, and covers all kinds of wage paid to all employees. The most part of Hospital's labor costs is paid to doctors and clinical human resources (medical technicians and etc.) This model assorted labor costs into ones for doctors and clinical human resources, and for their assistants.

4 Conclusion

Until now, we extracted Cost analysis model which can be applied to domestic hospitals, based on Hospital cost analysis method which main countries of Europe are taking, especially German. There is no consistent theory about setting up cost center. Cost center is decided considering scale, characteristic and organization structure, in general, and the more cost center is subdivided the more expenses are needed, though the utility of cost analysis can get higher[7].

Cost analysis by patients for domestic hospitals will be possible, when applying cost analysis model which was developed in this study, which will be able to become more reasonable standard for measuring a suitable medical cost. Moreover it is expected that more specific cost analysis will be possible, if additionally building subdivided cost center up, on the foundation of cost center which was presented in this model. We hope that the empirical study using hospital's financial database would be made, hereafter.

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